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Increased Patient Education & Medication Adherence Benchmark Study

The University of Texas at Tyler School of Nursing

In partial fulfillment of

NURS 5382: Capstone

By

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INCREASED PATIENT EDUCATION & MEDICATION ADHERENCE

Executive Summary

When evaluating what the United States spends annually on health care, it is estimated that 3% to 10% is spent on avoidable healthcare costs related to medication non-adherence. This can total anywhere between $100 and $300 billion dollars a year. When taking a closer look at medication adherence rates in patients with cardiovascular disease, 50% were found to have poor adherence (Iuga & McGuire, 2014). Another study looked at different populations and found patients over the age of 60 had a lower adherence rate of 27% (Yazdanpanah, Moghadam, Mazlom, Beigloo, & Mohajer, 2018).

Geriatric patients have been found to be a higher risk for non-adherence because they often face other barriers which interfere with taking their medications. As patients age, they can develop memory loss, decreased dexterity and fine motor skills, impaired vision, and dysphagia. As they age, they develop more chronic conditions which increases number of medications they need to take (Notenboom, Beers, van Riet-Nales, Egberts, Leufkens, Jansen, & Bouvy, 2014). When researchers asked patients why they were unable to follow their medication regimen, they noted the top patient responses were treatment costs, the complexity of their medication regimen, fear of addiction, possible side effects, and their overall lack of understanding of why adherence was so important (Wick, 2011).

Geriatric patients' high rate of medication non-adherence is a growing problem and is a cause for great concern. Patients with poor medication adherence have a higher chance of rehospitalization and poor therapeutic outcomes, plus it can lead to increased healthcare costs and an increase in their disease progression. Up to 10% of hospital readmissions are a result of medication non-adherence (Verloo, Chiolero, Kiszio, Kampel, & Santschi, 2017). Geriatric

patients will continue to face challenges, which will interfere with following their medication schedules and healthcare providers will have to find creative ways to help their patients overcome these challenges.

1. Rationale for the Project

While reviewing the patients' top responses, it was noted that additional patient education and assessments can help eliminate some of the barriers. It can also correct any misinformation these patients have with regards to their medication. In another study the level of medication adherence positively correlated with the patients' educational status, along with their knowledge of their disease and their prescriptions (Shruthi, Jyothi, Pundarikaksha, Nagesh, & Tushar, 2016). When educating patients on their diseases and medicines, it is important to utilize different methods and techniques. Researchers found when they handed out an educational brochure to each patient, specific to their disease, only 68.1% remember receiving it and 49.1% actually read the information (Freigofas, Seidling, Quinzler, Schottker, Saum, Brenner & Haefeli, 2015). Therefore, educational brochures are not sufficiently effective, but can be useful as a supplement to more in depth educational techniques. These If staff members only rely on education brochures, their patient education may not be as effective as if they had used other techniques. Patients can refer to handouts after they have left the hospital, but staff members should not rely on patients reading and comprehending this material.

As previously discussed, aging adults have many barriers to learning. As memory loss, decreased dexterity, and impaired vision become more pronounced, educational techniques will need to be modified to each specific patient. A group of researchers used prospective

memory interventions to help patients with dementia or depression remember to take their medications (Insel, Einsteing, Morrow, Koerner, & Hepworth, 2016). With this intervention, they were able to switch the patients from relying on their executive function and working memory to an automatic associative process. An example is teaching the patients to remember a medication with their meal instead of at a specific time. Over time they would automatically remember a medication at breakfast and as they prepare breakfast, this action would trigger their memory. At the end of the study, they found the medication adherence rate increased from 57% to 78% (Insel et al., 2016). Also, in a systematic review of fourteen studies, nine studies had increased medication adherence rates after nurse-led and nurse-collaborated interventions. The interventions included additional patient teaching, discharge education, reminders, home visits, and medication teaching (Verloo, et.al., 2017). This shows the importance of the nurses' involvement with patient education, also quality patient teaching exercises can make a great impact on our patients and give them the extra information needed to be successful with their treatment.

1.1 Project Goals & Results

The goal of this Benchmark Study is to reinforce the importance of patient education and how additional education can make a positive impact on medication adherence. When nurses and staff members are effective educators, they will have a stronger impact on patients. The goal is the increase knowledge of our patients' prescriptions, their disease, and complications resulting from medication non-adherence for patients living with a chronic disease. Another goal is to establish patients' adherence rates, their educational background, and an overall assessment of their readiness to learn upon admission. This knowledge will help

the nursing staff and educators adjust their techniques and materials to meet the specific needs of each patient. In the end, we want our results to show an increase in medication adherence as a result of increased patient education. We want to introduce the nursing staff to additional tools they can use to evaluate patients and ways to help decrease patient barriers. Hopefully with our additional efforts, patients will increase their adherence, which will help them control their disease. Additional results could be less medication errors, reduced complications from their disease, and decreased readmission rates.

Benefits for the hospital could include less unnecessary admissions, which can reduce the cost of staffing and the need for overflow units when the hospital is at capacity. One long-term goal is to decrease readmission rates resulting from medication errors and non-adherence. Another long-term goal is to reduce the amount of money wasted on avoidable health care costs spent by the United States, hospitals, and insurance companies. Lastly, it is important to help our patients feel better. This can be achieved as medication adherence may slow down their disease progression.

2. Literature Synthesis

The search process included using Google Scholar and CINAHL to find nursing journals and research studies. I included key terms such as “geriatric patients, medication adherence, patient education, and non-compliance”. I focused on articles less than seven years old and I found several articles covering many reasons why geriatric patients are less adherent and how education helps increase medication adherence. I had to omit several articles because they exceeded the time frame.

Taibanguay et al. (2019) conducted a randomized control trial. The aim of this study was to assess how different types of patient education influenced medication adherence in patients with rheumatoid arthritis. This trial had a total of 120 patients enrolled and at the end of twelve weeks, they found the patient adherence rates increased significantly in in both groups. Group One received a multi-component education intervention and Group Two, the control group, received a single education intervention. Group One had increased from 92.21 to 97.59, while Group Two increased 88.60 to 92.42. This study highlights the importance of patient education even though there was not a significant difference in which intervention.

Yazdanpanah et al. (2019) conducted a randomized control trial of 60 patients, aimed to determine the effects of an educational program based on the Health Belief Model (HBM) on medication adherence in older patients with hypertension. They found the lack of self-care problems were a result of inadequate education and patients receiving the intervention, which was eight educational sessions based on the steps of the Health Belief Model, had a higher adherence rate at the end of the study. The mean scores of medication adherence rose from 4.2 to 6.7 at the end of the study, while the control group went from 3.8 to 3.7. The researchers conclude the additional sessions based off of the HBM may improve medication adherence with elderly patients.

In a systematic review by Verloo et al., (2017), of fourteen studies with a total of 2028 patients, the aim was to assess the effects of nursing interventions on medication adherence in older adults. Researchers evaluated the results of studies with nurse-led or nurse-collaborated interventions and found nine out of fourteen studies had increased medication rates amongst the intervention groups. This study highlights the importance of nurses participating and

leading patient teachings. They are able to build a trusting relationship with their patient and can be more effective than other types of education.

In a two-group longitudinal randomized control trial by Insel et al. (2016), 116 participants completed the study testing the effects of prospective memory interventions have on medication adherence. The purpose was to examine the effects of a four-week multifaceted prospective memory intervention on medication adherence for elderly patients self-managing their anti-hypertensive medication. The interventions included "retraining" the older adults from relying on their working memory to an automatic associative process. Initially they found an increase in medication adherence from 57% to 78%, but some of the effects were not maintained after five months. This was an effective intervention, but a long-term plan must be in place to continue the positive results.

Shah et al. (2013) conducted a randomized control trial to evaluate the explore the prevalence of medication non-adherence among 200 elderly patients and to explore the reasons affecting adherence and impact of patient education. Researchers found 58% of the group receiving education improved with their adherence and the control group had 45% remain unchanged and 9% worsened over time. One problem to note was the study lost 59 total patients to follow up (21 from the intervention group and 38 from the control group). From their study, we had a medication noncompliance rate of 77.5% and out of 200 participants, 55% experienced at least one difficulty with taking their medications. Visual problems accounted for 47.5% of the reasons and forgetfulness was 41% another difficulty they faced. While the results show an improvement with educations, it also points out how many patients are non-adherent and the factors affecting their adherence.

In a cohort study by Freigofas et al. (2014), researchers aimed to assess the prevalence, structure, layout, and quality of medication schedules of older ambulatory patients. Even more, they wanted to evaluate the impact of sending blank medication schedules and educational brochures would have on medication adherence and increase the use of a medication schedule. There was a total of 2,470 patients and they found only 22.4% had a mediation schedule. The results show sending a blank medication schedule and a brochure on their medications made no impact on their adherence. In the intervention group of 1,237 participants, only 68.2% remembered receiving the brochure and 49.1 out of the group that remembered receiving the brochure actually read it. This study highlighted the importance of patients not always reading their educational brochures. It also pointed out how medication schedules may miss over the counter drugs if they are given by their health care provider. It is also noted how a patients' handwritten medication schedule may have incorrect dosages and can be illegible.

In a descriptive study conducted by Son et al. (2017) researchers aimed to study the role of self-efficacy in the relationship between depression and medication adherence among older patients diagnosed with hypertension. There were 255 participants and researchers discovered 29.8% suffered from depression, which is significantly higher than the 10-13% they have observed in other studies. The results show depression negatively correlated with self-efficacy and medication adherence, while self-efficacy positively correlated with medication adherence. Researcher feel they can improve medication adherence through treatment for depression and enhancing self-efficacy. It would be beneficial to look closer at the underlying causes of depression and how to help the patients.

Monterroso et al. (2015) conducted a descriptive study to evaluate the effects of socio-demographic and economic characteristics of geriatric patients, characterize their medication adherence, and identify variables influencing non-adherence. There were 55 participants and the results show 72.7% were non-adherent, 83.6% take three or more medications, and 47.3% were diagnosed with moderate dementia, and 45.5% had moderate depression. When medical staff is planning interventions, the patients' mental status must be factored in. Depression and dementia have a negative impact on medication adherence and should be evaluated early on in the treatment plan, plus regular follow up evaluations.

A randomized controlled trial by Campins et al. (2017) aimed to assess the effectiveness and safety of medication reviews for poly-medicated geriatric patients. There were 503 participants in this study and 2,709 prescriptions were evaluated. After medication reviews, researchers found 26.5% of prescriptions were rated as inappropriate and 21.5% of the prescriptions were changed. Overall, 95.6% of the patients had a at least one medication recommendation after the reviews. Because polypharmacy is a concern for older adults, this is a beneficial service. It is estimated 6-7% of readmissions of the elderly are related to problems with prescriptions and 60% of these readmissions could be avoided if the patients' prescriptions were appropriate. This is an easy intervention most physicians or pharmacists can do to make sure the prescriptions and dosages are correct.

Another randomized controlled trial by Willeboordse et al. (2017), evaluated the benefits of clinical medication reviews (CMR). The aim was to investigate the effectiveness of CMR on the quality of life and geriatric problems. A total of 518 patients were included and while the researchers didn't find an increase on the patients' quality of life, but they did find a

higher percentage of solved drug-related problems after six months. Once again, this shows the importance of regular medication reviews, especially for patients with a high number of prescriptions.

Shruthi et al. (2016) led a cohort study to assess the level of medication adherence in elderly patients with chronic illnesses and to analyze the factors influencing medication adherence. There was a total of 251 participants in the study and around 54.59% had moderate to poor adherence. Medication adherence positively correlated with the participants' educational background and how much they knew about their disease and prescriptions. They examined factors such as gender, age, income, support system, physical disabilities, and number of prescriptions. Education definitely plays an important part of adherence because subjects will have a better understanding of their disease, prescriptions, physician's orders, and results of not remaining adherent.

The last study was a cross-sectional descriptive study by Jin et al. (2016) and their purpose was to examine the functional health literacy among older adults and identify influencing factors that may predict medication adherence. Researchers evaluated the functional health literacy score of 160 participants and found the mean score was 7.72 on a scale of 0-15. They found non-adherence was associated with the patients' education level and the participants noted additional patient counseling might increase their knowledge and skills for correct medication administration. They felt they were unaware of the potential side effects and consequences of inappropriate medication taking. This was a valuable study because it is important to gain the patients' perspectives and remember not many of the patients much knowledge with health-related subjects.

3. Project Stakeholders

Project stakeholders will include the health care system, private insurance companies, the United States government, employers, patients, and their family. The healthcare system, private insurance companies and the government are important stakeholders in the new educational process because they are all affected by the additional costs of rehospitalizations related to medication non-adherence and medication errors. Hospitals have to handle overwhelmed emergency departments and staffing or bed shortages. With a large influx of patients, hospitals may open temporary units and pay for additional staff for these units and possible overtime during staffing shortages. Private insurance companies are affected and have to raises insurance rates. The government wastes billions of dollars each year as a result of medication non-adherence and frequent rehospitalizations will affect Medicare (Iuga & McGuire, 2014).

If patients are still working, this can affect their employers because employees will miss work and their employers can face increased medical insurance premiums. Patients can also experience increased copayments and lost wages from their job because of their chronic illness and frequent hospitalizations (Iuga & McGuire, 2014). Plus, frequent hospitalizations and feeling ill most of the time may lead to feelings of depression and cause patients to experience emotional distress. The patients' family can have an increased burden because they may experience lost wages and increased stress from the burden of taking care of a chronically ill patient. Medication non-adherence can affect so many different areas and reducing non-adherence can have a positive impact on so many organizations.

4. Implementation

After we receive approval to implement this evidence-based plan into a hospital, we will review current hospital policies pertaining to patient education. If there are not any policies in place, we will create a new protocol about effective education to present to the hospital management team and senior leadership team at a later date. To begin with, we will focus on the cardiac unit and will spend the next several days reviewing their current educational material.

Through assessment and evaluation, we can identify the areas needing improvement and the pieces we find useful. It is important to speak with nurses and establish how they currently are educating patients and we can shadow nurses during their patient teaching times. Next, we will develop additional supplemental materials and spend time improving their current education techniques. To begin with, we are only focusing on hypertension and hypercholesterolemia and focus on the medications specific to these diseases.

Fourth step is to introduce patient surveys and new material to the nursing staff. Upon admission, nurses can use our tools to establish adherence rates, medicine taking behaviors, assess their functional health literacy, and depression. We will work with nursing staff on their current techniques and train them to become more efficient educators. After our staff education sessions, we will meet with new patients and discuss our goals. After we obtain written consent to participate, nurses will evaluate patients' current knowledge of their disease, complications, current side effects, and how adherent they are.

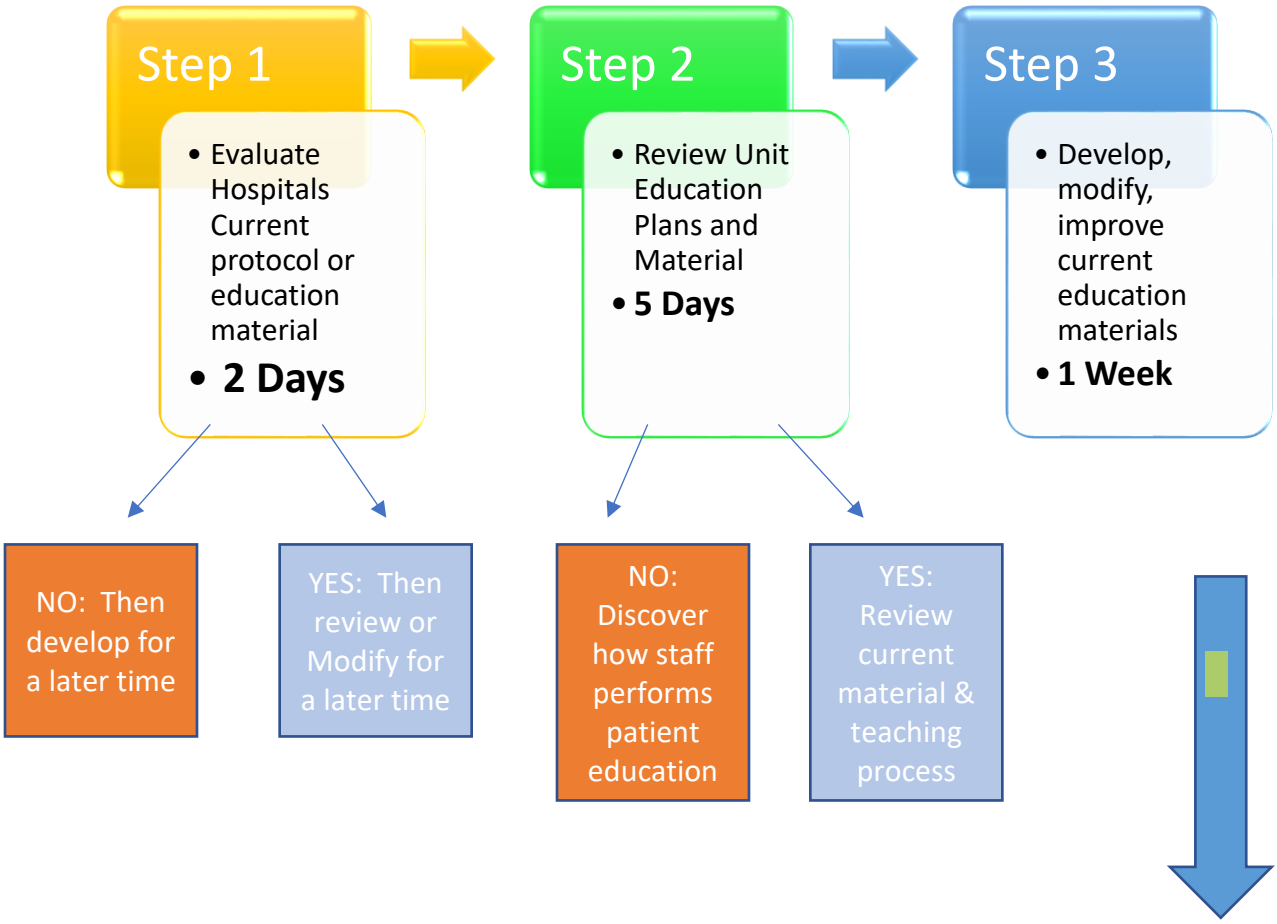
With the results of our surveys, this will be the starting point with our patients. Staff will have an idea of patients' health literacy scores, or educational background, adherence level, and knowledge of their own disease. Educators and nurses can tailor their educational

material and teaching session to meet the specific needs of each patient. Patient education should begin as soon as possible and can be small pieces of information each time the nurse is caring for the patient. Nurses should try to identify any barriers the patients may experience and we can work to help eliminate them. This may include a medication review of their prescriptions, by a physician, to reduce the number of prescriptions or switch patients to a lower cost drug. If patients have an issue with dexterity, we can have an evaluation with an occupational therapist. As patients are discharge, nurses can do a final check and send patients home with updated medication schedules, pill boxes, and follow up appointment schedules.

After patients leave, a designated staff member can follow up with patients within three to four days to check on them. We want to be available to answer questions, address any issues, and if they are experiencing any issues with their medications. It is also important to check on their medication adherence. If they report problems remembering, this is when we can find a way to help solve this problem. Eventually our goal is to move to two weekly check-ins, then two bi-weekly check-ins, and then monthly. By three months, the patient should have established a routine and had follow up lab results. At the end of three months, patient information is gathered, reviewed, and medication adherence rates re-checked. Lab work and rehospitalizations are reviewed and all of the information is presented to the unit manager, unit educator, and senior leadership. Hospital educators will be able to compile this information and develop teaching techniques to share with the other units. Our goal is to help staff members become more comfortable with patient education and increase their confidence. Lastly, continue to track readmissions and reasons for readmissions to evaluate the outcome of

this project. Continue with staff follow up training and modify educational materials and techniques as needed.

5. Flowchart



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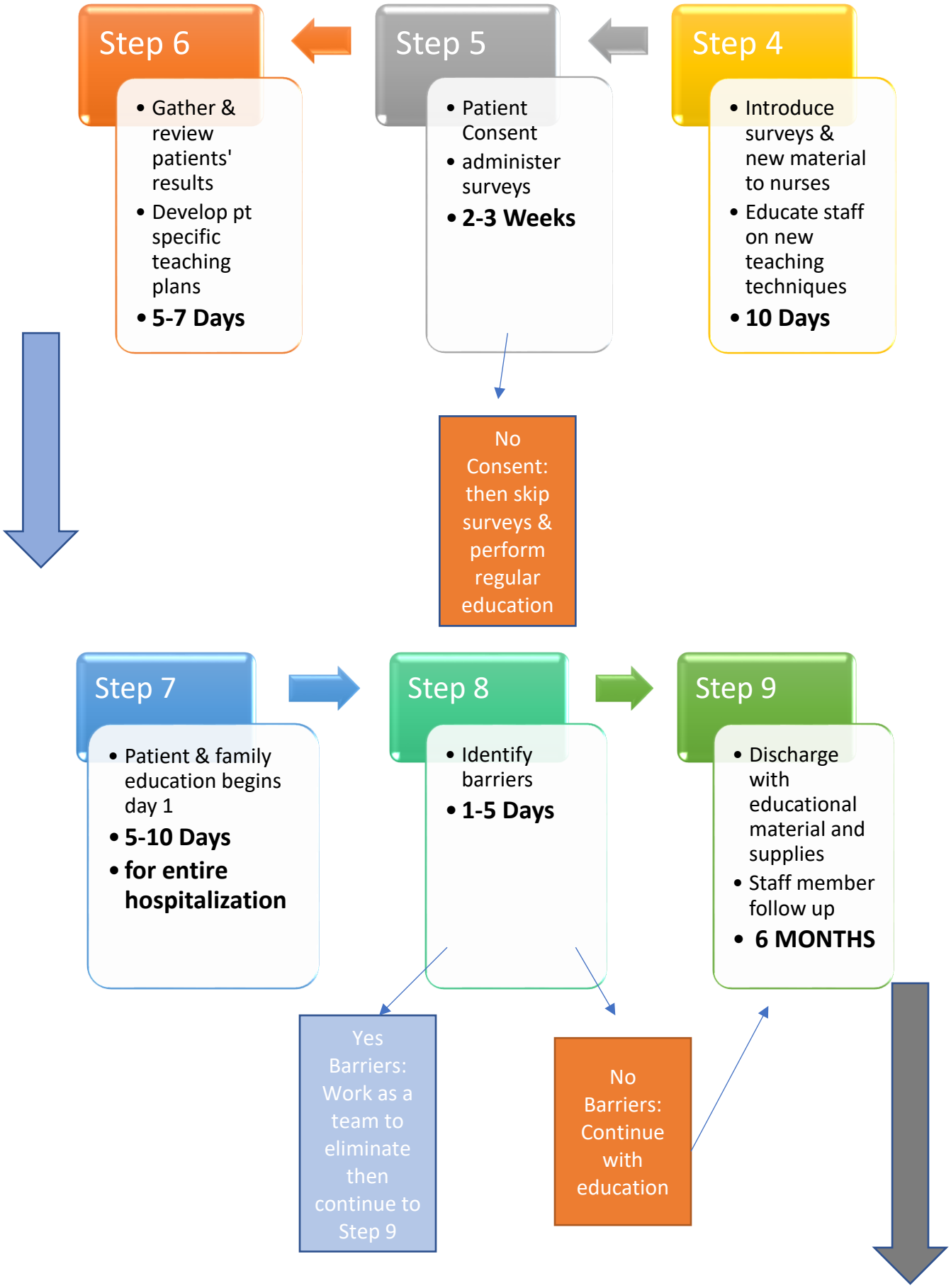

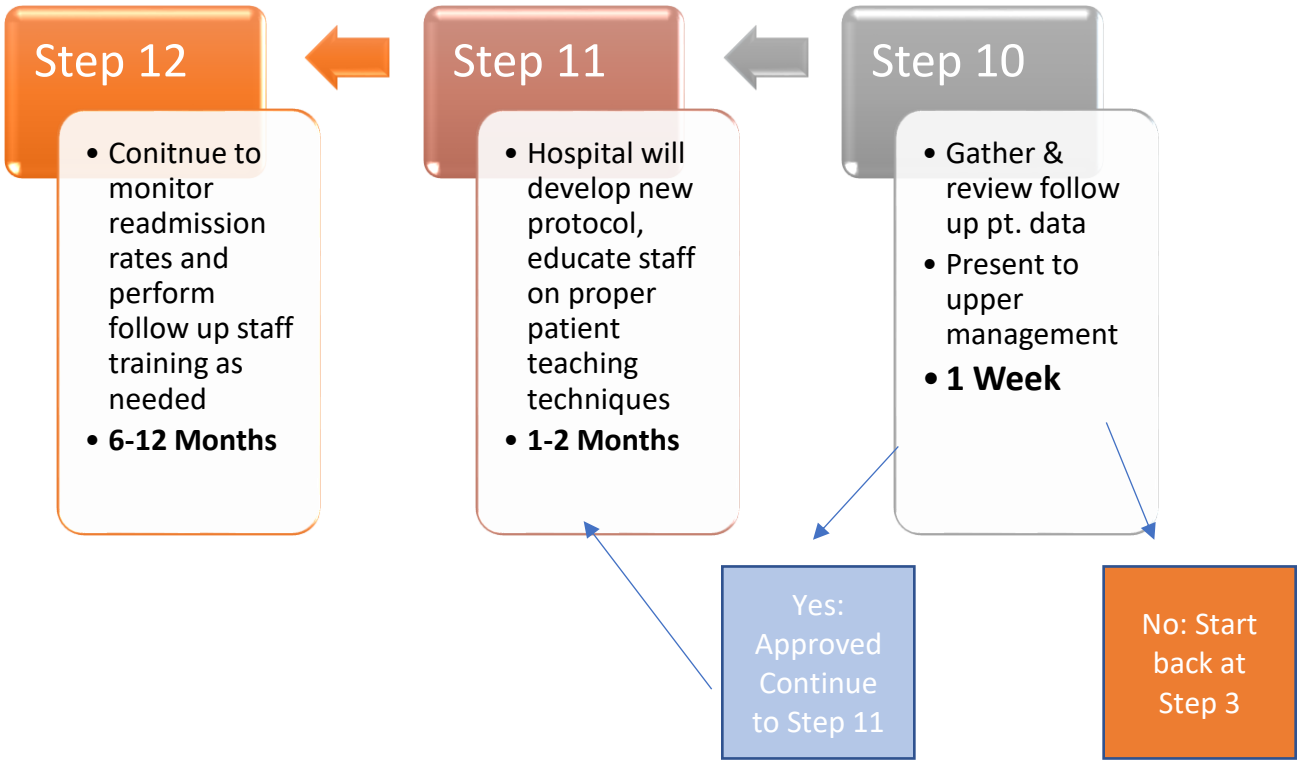

6. Data Collection & Evaluation

First, nurses will gather information from the patient through a series of questionnaires or tools. To establish adherence rates, the Morisky Medication Adherence Scale and Adherence to Refills and Medication Scale to find their baseline adherence rate. During admission, it is an important time to evaluate for depression, or their mental status, using the Geriatric Depression Scale and the Mini Mental State Exam. Researchers have found 75.5% of non-adherent patients suffered from depression and 87.5% had some type of cognitive impairment (Monterroso, Joaquim, & Octavio del Sal, 2015). Nurses can ask about educational background

and their support system during admission to gain some insight into their homelife and to begin thinking about the types of education they will require.

Next the nurse will perform a health assessment, noting the vital signs and recent lab work to use as their day one numbers. Throughout their hospitalization we can monitor their vital signs to evaluate the effectiveness of their antihypertensive medication, which will give us first-hand knowledge of their adherence, if the medication is working, and any side effects. Upon discharge, patients will leave with all of the materials needed to track their blood pressure at home and pill bottle timers.

A designated staff member will continue to follow up with patients and they will record patients' blood pressure results. They will also record pill counts, discuss adherence and refills, plus address any complications and questions. Staff will input all data and date into our spreadsheet designed for this study. Educator will meet bi-weekly with the unit manager and staff members in charge of patient phone calls to discuss any readmissions and any issues the patient is experiencing.

At the end of the six months, we want to re-survey our participants and get their opinion of the educational material, inpatient teaching, and how they feel about our interventions. At this time, all of the data will be evaluated and used to create a presentation for the unit manager, senior management members, unit educators and unit staff members. We will use the baseline data, plus the data gathered from the entire hospitalization and compare it to the three months of follow up data. Our goal is to see controlled blood pressure measurements, increased medication adherence rates, a reduction in complications, side effects, and readmissions

resulting from their disease. We will also discuss how we eliminated barriers and how our patients' felt about the interventions.

7. Cost and Benefits

We will need to review the materials needed and calculate how much this project will cost before beginning. The majority of items are going to be developed from office supplies and we will need approval for us to use some of the unit's budget for our materials. The materials needed will include updating and creating new educational items for hypertension and antihypertensive medications. We estimate we will use $100 in office supplies and $250 for educational material. Each patient will need to leave with an updated medication schedule, blood pressure sheet to record their results, a pill tracker bottles, and verify they have a portable blood pressure machine at home. We will contact the patients' insurance company to see if they offer a portable blood pressure machine or pill tracker bottles. If not, we will look at wholesale options for the patient to get reduced prices. Walmart has blood pressure machines for as low as $13.19 and Amazon has pill trackers for as low as $14.99. Another cost will be to educate nursing staff from each unit and for an educator to work with staff members. Staff will have to receive compensation for their additional time to re-learn how to properly educate patients. We are estimating four hours of training, at their base salary of $25-35 per hour, for each staff member, which is estimated to be $100-140 per person. The unit educator will be compensated for their assistance and it is estimated at $40-45 per hour for ten hours, an estimated $400-$450. For a final cost, we will need to know how many staff members are on the unit and if the patient needs to be supplied with a blood pressure monitor, or pill tracker.

Before this begins, approval from unit manager, senior leadership, and budget reviews must be performed.

There will be initial costs upfront, but the future benefits of the evidence-based change will offset for these costs. The hospital will benefit from the reduced emergency room visits and a reduction in readmissions as a result of medication non-adherence. This will free up beds and staff, plus reduce the need of opening over-flow units, hiring additional staff, and overtime pay. Also, if patients are more adherent, there will be a long-term reduction in their personal costs and reducing the amount of money spent on avoidable health care costs. Plus, we are hoping to they will have an increased quality of life.

Recommendations & Conclusion

It is estimated around 83.6% of elderly patients have three or more medications and about 72.7% of elderly people fail to adhere to their medications (Monterroso, et al., 2015). Not only are aging adults at a disadvantage because of their declining physical abilities but are susceptible to memory loss and cognitive decline. A recommendation is to evaluate patients for depression and their mental status. Depending on the results, nurses can adjust their patient education and include the family or a caretaker. Physicians can also begin treatment for depression, which may increase their desire to care for themselves. Also, patient education should begin as soon as possible to prevent overwhelming them with too much information at discharge. Starting day one, the nurse can introduce patients to new information and repeat the same material each day. Through repetition, we hope to increase the chances of our patients retaining the information. Another recommendation is to educate the staff members

to be more efficient patient educators. When the whole team is on the same page, it will be easier for staff members to treat different patients, but patient education won't suffer.

In conclusion, if staff members have more knowledge of barriers to medication adherence and become effective with their patient education, patients will have a higher chance of being more successful with their treatment. Through interviews and evaluation, nurses gain a deeper understanding of their patient and the challenges they face outside of the hospital. Nurses will then be able develop patient specific education for this individual, which will help the patient having more success in the future. Nurses enter into this field to help people and staff members really want patients to be successful with an improved quality of life.

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